REMARKS

Claims 1, 2 and 6-19 are pending in the application.

Reconsideration and review of the claims on the merits are respectfully requested.

Claim Rejections - 35 U.S.C. § 103

A. Claims 1, 6(1)-8(1), 10(1)-14(1), 18(1) and 19(1) are rejected under 35 U.S.C. §103(a) as assertedly being unpatentable over Mostafazadeh et al. in view of Lin et al. and Senoo et al. (U.S. Patent 5,705,016) and as evidenced by High Performance Films.

The Examiner maintains that Mostafazadeh et al. discloses adhering an adhesive tape (such as polyimide) to a lead frame having a chip mounted therein, encapsulating the chip and connectors with molding resin, and stripping the tape away. And the Examiner maintains that Lin et al. discloses a method of forming chips which are attached to traces and encapsulated wherein the chips and traces are applied to a Kapton film. The Examiner maintains that High Performance Films discloses that Kapton film has a thermal shrinkage of 0.10% at 200°C.

The Examiner recognizes that neither Mostafazadeh nor Lin discloses the type of adhesive used. However, the Examiner cites Senoo et al. as disclosing a pressure sensitive adhesive used to hold wafers in place for dicing which has a low adhesive strength (less than 300 gf/25 cm) to prevent the adhesive from sticking the frame around the wafer, where the adhesive can be silicone based.

The Examiner concludes that it would have been obvious to one of ordinary skill in the art to use any of the adhesives of Senoo et al., such as one based on silicone, on the Kapton film of Lin et al. in the process of Mostafazadeh et al. since the adhesive can hold electronic parts

securely and prevents the transfer of adhesive to the material it is attached to which is important since the chip bottoms of Mostafazadeh et al. can be bonded to other materials as is known in the electronics arts and particularly since the adhesive is known in the electronic arts.

The Examiner recognizes that the Senoo reference does not suggest the adhesive increases in strength after heating, but states that absent evidence to that effect, one in the art would assertedly expect the adhesive strength to remain the same after heating.

B. Claim 9(1) is rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over the references as applied to claim 1 above, and further in view of Wang (U.S. Patent 6,306,497), for the reasons of record.

C. Claim 15(1) is rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over the references as applied to claim 1 above, and further in view of Kraft et al. (U.S. Patent 4,240,938), for the reasons of record.

D. Claims 16(1) and 17(1) are rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over the references as applied to claim 1 above, and further in view of Fjelstad (U.S. Patent 6,001,671), for the reasons of record.

E. Claims 2, 6(2)-8(2), 10(2)-14(2), 18(2), and 19(2) are rejected under 35 U.S.C. §103(a) as assertedly being unpatentable over Mostafazadeh et al. in view of Lin et al., Senoo et al., and High Performance Films as applied to claim 1 above, and further in view of Oida et al. (WO 98/35382) (U.S. Patent 6,291,274 is considered an English language translation), for the reasons of record.

The Examiner cites Oida et al. as disclosing that tape carriers can be used in place of lead frames when encapsulating chips in resin.

F. Claims 9(2) is rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over the references as applied to claim 2 above, and further in view of Wang (U.S. Patent 6,306,497), for the reasons of record.

G. Claims 15(2) is rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over the references as applied to claim 2 above, and further in view of Kraft et al. (U.S. Patent 4,240,938), for the reasons of record.

H. Claims 16(2) and 17(2) are rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over the references as applied to claim 2 above, and further in view of Fjelstad (U.S. Patent 6,001,671), for the reasons of record.

Applicants respectfully traverse the rejections.

Applicants note that it appears that Aizawa '954 was withdrawn as a reference as lacking disclosure of silicone-based PSAs and replaced with Senoo.

Applicants traverse the *prima facie* obviousness rejections by focusing on the patentability of independent Claims 1-2.

Regarding the Examiner's comments to Senoo, the Examiner does not point to Senoo's adhesive tapes being heated to any given temperature. Applicants point out that Senoo's examples disclose that a dicing sheet including an acrylic adhesive containing thermosetting epoxy resin was heated to 40°C for three days (see Example 1, column 8, line 60 to column 9, line 14; see also Example 3, column 9, lines 55-61, disclosing the use of a silicone release agent

in addition to an acrylic adhesive). Applicants submit that the disclosure and teachings of Mostafazadeh, Senoo and any the other cited references, either individually or in combination thereof, do not render obvious Applicants' specifically claimed requirement in independent Claims 1 and 2 of having a pressure-sensitive adhesive strength of 400 gf/20 mm or less at 23°C *after the adhesive tape has been heated to a temperature of 180°C.* Although the Examiner states that one in the art would expect that the adhesive would have the same adhesive strength if heated to a higher temperature, Applicants reiterate arguments previously presented against the Hanneman reference (see Response filed August 25, 2003) along with additional remarks as follows.

In general, when an ordinary adhesive tape is heated to a temperature of 180°C, one would not expect that the typical adhesive tape would have the same adhesive strength because polymers contained therein would be decomposed. Thus, the heated adhesive tape may not even work as an adhesive tape.

Applicants traverse the *prima facie* obviousness rejections on the basis of distinctions between Senoo, in combination with the other references, and the presently claimed invention. Senoo discloses a low adhesive strength of less than 300 gf/25 cm, presumably at room temperature, but this range and unit of measurement is different from what Applicants claim. Since there is also a difference in temperature conditions between the present invention and Senoo's disclosure, Senoo's value is not appropriate to compare to the range of the present invention. Whereas Applicants claim a preferred embodiment of a PSA tape having a PSA strength of 400 gf/20 mm or less at 23° C after the adhesive tape has been heated to 180° C,

Senoo discloses a PSA strength of 300 gf/25 cm, presumably at room temperature of 23° C, after the adhesive tape has been cured at only 40°C for three days (See Example 1, col. 9, lines 8-11). The different experimental conditions negate the Examiner's attempted comparison of Senoo's PSA strengths with Applicants' claimed PSA strength range of 400 g/20 mm or less.

The reason why the adhesive strength is defined to be not greater than 400 gf/20 mm is that this order of adhesive strength is the maximum allowable level at which the molded article can be easily peeled off the adhesive tape. When the adhesive strength of the adhesive tape is greater than about 500 gf/20 mm, the finished PKG can be easily destroyed rather than easily peeled off the adhesive tape when peeled by force.

The highest heating temperature also has a strong effect on this point of distinction. As previously mentioned, as the temperature rises, an adhesive softens. Therefore, the adhesive adapts itself to the adherend with the rise of the highest heating temperature. In other words, the adhesive adapts itself more to the adherend when the heating temperature rises somewhat. Since the adhesive adapts itself more to the adherend when heated to a temperature of 180°C than when heated to a temperature of 40°C, it is natural that the adhesive exhibits a higher adhesive strength when heated to a temperature of 180°C than when heated to a temperature of 40°C, in a scale of several times to about one digit higher. In other words, it can be normally thought that the adhesion strength value measured when heated to a temperature of 40°C can still rise to a value higher than previously defined if measured at a temperature of 180°C. Accordingly, in Senoo et al, the value measured at a temperature of 23°C after substantially heating to a temperature of 40°C doesn't fall below 400 gf/20 mm.

In general, in ordinary transfer molding, resin encapsulation is conducted at a temperature of from 170°C to 180°C to melt and fluidize an epoxy resin. Therefore, evaluation at a temperature after being heated to 180°C as claimed in the present invention is essential, and the discussion of characteristics at a temperature of 40°C as in Senoo gives no significant figures for the purpose of mold masking. Thus, Senoo does not teach or suggest at least the claimed PSA strength of 400 gf/20 mm or less at 23° C after the adhesive tape being heated at 180° C, and the other references fail to make up for Senoo's deficiencies.

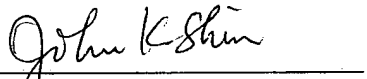
Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a).

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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